# DEC STD 140-7 Engineering-Supervised Build (ESB) Release Requirements for Printed-Wiring Boards, Modules, and Backplanes

**DOCUMENT IDENTIFIER:** A-DS-EL00140-07-0000 Rev B1, 26-Feb-1990

**ABSTRACT:** This section describes the sign-off process for engineering-supervised built printed-wiring boards, modules, and backplanes. It defines the interaction between engineering and manufacturing that applies to all Digital design engineering sites.

**APPLICABILITY:** This standard is mandatory for all printed-wiring boards, modules, and backplanes related by Digital. DEC STD 140-0 provides an introduction and general requirements for this standard.

**STATUS:** APPROVED 26-Feb-1990; use VTX SMC for current status.

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Bob Dubois - Standard Owner

Eric Williams - Standards Process Manager

Direct requests for further information to:

Bob Dubois or John Graham
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# 1 INTRODUCTION

ESB printed-wiring board (PWB) process requirements are defined to allow documentation to be signed off and released for applications that do not have to meet the more stringent requirements for manufacturing production release, as defined in *DEC STD 140-6 Production Release Requirements for Printed-Wiring Boards, Modules, and Backplanes*.

The requirements are established by defining the documentation package contents; the procedures are established by defining the relationships between various departments.

Module and PWB tooling may not be required in this process. The modules must be processed through the prototype release process defined in *DEC STD 140-5 Prototype Release Requirements for Printed-Wiring Board, Modules, and Backplanes* as part of this process.

ESB considerations to build PWBs are:

- Costs for ESB boards are considerably higher than volume release boards.
- Priority of ESB boards will be the same priority as prototype lot orders in the prototype board shop.
- Quantities of ESB boards are to be negotiated between the prototype board shop and engineering prior to sign-off.
- ESB boards do not require producibility checks - package review only.

The process has two variations. See Figure 1:

a. Documentation release only.

b. Documentation release and building PWBs.

## 1.1 PURPOSE

The purpose of this standard is to establish procedures for release of PC board documentation for ESB applications.

## 1.2 SCOPE

This process is used for internal designs such as simulator and tester boards and other ESB products, for which the engineer assumes responsibility for building and testing. These boards will not be built in a Digital production release plant.

## 1.3 RESPONSIBILITIES

### 1.3.1 Responsible Product Engineer - Design Sites

Responsible product engineers, as defined by the Chief Engineer's Option/Module List, shall ensure the design and sign off of all documents in this process. The design site supporting the engineer provides the proper documentation and arranges the Producibility services as required for release.

### 1.3.2 Prototype PWB Site

The prototype PWB site is the manufacturing group responsible for generating soft tools for PC boards as required.

### 1.3.3 Central Services Liaison (CSL)

CSL is responsible for transporting ESB packages between engineering design sites and the prototype PWB site.

## 2 TYPES OF ESB RELEASES

All ESB releases are 50/54-class.

### 2.1 DOCUMENTATION RELEASE ONLY

For a documentation release only, the responsible product engineer determines that PWBs are not required. However, the boards must have been fabricated, assembled, tested, and evaluated, so that the documentation can be released for a future ESB re-order. See Figure 1.

Requirements for documentation release include the following:

a. The responsible product engineer must complete all approval blocks on the MD prints in addition to signing off the rest of the documentation.

b. The MD and UA prints must include the following note:

   "ESB Release. Not intended for volume manufacturing"

   The ESB code indicates to manufacturing facilities that the board is engineering-supervised build and is not to be produced as a manufacturing production release. The ESB status will not be divulged to outside customers.

c. Any changes, including future manufacturing production releases (formerly called high volume orders), will require an ECO. In some cases, the ECO may only involve removal of the notation and creation of a KPL. In others, extensive re-layout may be required to meet manufacturing requirements.

### 2.2 DOCUMENTATION RELEASE AND BOARD BUILD

The combination documentation release and PWB build process, shown in Figure 1, is initiated by the responsible product engineer when he has determined that the documentation reflects the design he wants to have built.

**NOTE**

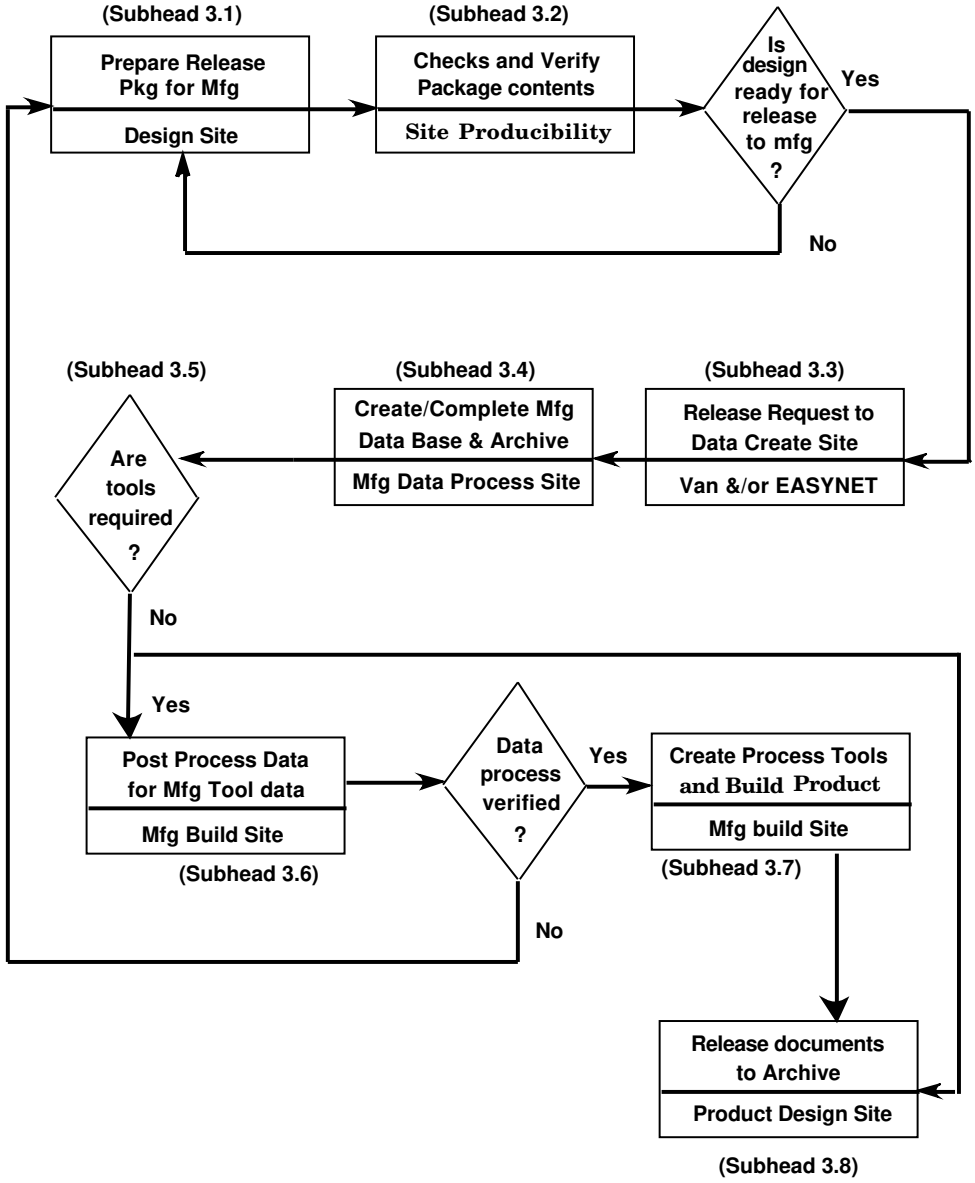
**The engineer may sign off the documentation prior to having boards built, fully accepting the responsibility that if changes are necessary to the print set after testing and evaluating the ESB PWBs, an ECO must be initiated to make the changes.**

The criteria for items a, b, and c in subhead 2.1 also apply to this process.

## 3 ESB RELEASE PROCESS

The ESB release process is shown in Figure 1. The subheads under this heading supplement the flowchart annotation shown in Figure 1.

**Figure 1: ESB Release Process Flow**



### 3.1 RELEASE PACKAGE

The design site prepares a transfer package of data and information required for release. 50-class sign-off/approval by the responsible product engineer occurs at this time. This package is delivered to Producibility for package review only.

### 3.2 VERIFY PACKAGE

For all classes of ESB release, Producibility shall do the following:

a. Verify that the documentation contents are complete.

b. Verify that the documents are signed and that the revisions agree with those on the DD.

### 3.3 RELEASE PACKAGE TO DATA CREATION SITE

Once the release package has been verified by Producibility, it must be forwarded to the location where the manufacturing data will be initially used. The type of transfer media and actual process used will determine how the data is transferred. Sites using traditional processes will use a shuttle van while sites using one of the "paperless" processes can deliver entirely over the ENET.

### 3.4 CREATE OR COMPLETE THE DATA

Once the transfer package is received by the data site, assembly- or board-level data will be either created or completed. The actual design process will determine the location and procedures of this activity.

For those sites using an automated paperless process, the transfer package will include preliminary data. The completion site for this process will complete the definition of the data by adding assembly board-level information.

More traditional processes that use PDFs as interface files will be delivered to different sites. Transfer packages for etch boards are typically delivered to the Prototype PWB facility. 54-Class prototype transfer packages are typically delivered to the assembly group-level manufacturing tool generation site.

Regardless of the process used, the end result is the same, that is, manufacturing product representatives will take engineering circuit-level information, add manufacturing assembly level data, and output completed data, which is then forwarded to the appropriate manufacturing tool generation site.

Once the data is verified, the data is stored at the data site for possible future use. Design sites using paperless processes must use the ENET to transfer the completed data to the manufacturing site.

### 3.5 TOOLS REQUIRED

If tools are required, the data is transported to the manufacturing build site.

### 3.6 PROCESS PRODUCT DATA

Since the data contains limited process information and is primarily a description of the physical product, it may be processed before manufacturing data can be created. Manufacturing processes and process parameters may vary from location to location and are changing to take advantage of newly developed technologies. For this reason, each manufacturing build site is responsible for integrating their specific process needs with the product data contained in the data for creating their manufacturing tools.

If data processing cannot be completed, the data package shall be returned to the design site.

### 3.7 CREATE TOOLS

Once the manufacturing data has been processed, actual tools such as artwork, drill tapes, and insertion tapes can be created. Upon successful completion of tool generation, the manufacturing plant must notify the design site to release the product documentation using the Release Verification Form shown in DEC STD 140-6, Figure 6-2. At this time, production of the product may begin.

### 3.8 RELEASE DOCUMENTS TO ARCHIVE

#### 3.8.1 Sign Off 50/54-Class Documents

Once the Release Acceptance Notification has been received, the design/drafting site coordinator will have the responsible product engineer and a manufacturing site representative sign off the drawings. The 50- and 54-class release design data will be sent to design site document control by the design/drafting site coordinator.

#### 3.8.2 Release Document Distribution

During the release distribution cycle the microfilming of drawings and distribution of aperture cards takes place and the original data is sent to the site library for storage and archiving. After Micrographics Services (or an approved vendor) accepts the drawings, it will transfer the original drawings received during etch and module release cycles to the site library, the duplicards to the plant sites, and the signed Package Content Sheet to the site release coordinator, who will close out the work order, stop Unit Charge, and notify the engineer that his job is complete.

Refer to *DEC STD 033-0 Microfilm Aperture Cards - Creation and Distribution Process* for release distribution details.

## 4 RELEASE PACKAGE CONTENT REQUIREMENTS

### 4.1 DOCUMENTATION ONLY

Tables 1 and 2 summarize the content requirements for documentation only and fabrication build packages. The design site coordinator will submit the package requirements as listed in Table 1.

**Table 1: Summary of Release Package Requirements For ESB Releases (Documentation Only)**

| Item Name | Requirement | Detailed Information |
|---|---|---|
| Product Data* | 1 Complete Set of magnetic tapes/ENET data | DEC STD 140-4 (in process) |
| Technical Data File (if required) | 1 Copy | DEC STD 140-6, Subhead 5.6 |
| Package Verification Request Sheet | 1 Copy | DEC STD 140-6, Subhead 5.5 |

* Complete component-level information is required.

### 4.2 BOARD FABRICATION

The Design Site Coordinator will submit package requirements as listed on Table 2.

**Table 2: Summary Of Release Package Requirements For ESB Releases (Board Fabrication)**

| Item Name | ESB 50/54-Class | Detailed Information |
|---|---|---|
| Product Data * | 1 Complete Set of magnetic tapes /ENET data | DEC STD 140-4 (in process) |
| Mechanical Detail (MD) For Drill and Etch | 1 Complete Set | DEC STD 140-6, Subhead 5.2 |
| Unit Assembly (UA) Drawing | 1 Complete Set | DEC STD 140-6, Subhead 5.3 |
| Parts List (KPL) | 1 Complete Set | DEC STD 140-6, Subhead 5.4 |
| Package Verification Request Sheet | 1 Copy | DEC STD 140-6, Subhead 5.5 |
| Technical Data File (if required) | 1 Copy | DEC STD 140-6, Subhead 5.6 |
| ECO Face Sheet | 1 Copy (ECO release only) | DEC STD 140-6, Heading 4 |

* Complete component-level information is required.

# APPENDIX A REFERENCED DOCUMENTS

## A.1 EL-Class Digital Documents

| EL-Class Number | Document Title |
|---|---|
| EL-00033-00 | *DEC STD 033-0 Microfilm Aperture Cards - Creation and Distribution Process* |
| EL-00140-00 | *DEC STD 140-0 Documentation, Data, and Release Requirements for Printed-Wiring Boards, Modules, and Backplanes - Introduction* |
| EL-00140-04 | *DEC STD 140-4 Etch Board and Module Release Verification Requirements and Procedures - Data Requirements* |
| EL-00140-05 | *DEC STD 140-5 Prototype Release Requirements for Printed-Wiring Boards, Modules, and Backplanes* |
| EL-00140-06 | *DEC STD 140-6 Production Release Requirements for Printed-Wiring Boards, Modules, and Backplanes* |

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